STANDING STOCKS OF FISHES IN SECTIONS OF RED CLOVER, LITTLE LAST CHANCE, BIG GRIZZLY, LAST CHANCE, AND SQUAW QUEEN CREEKS, PLUMAS COUNTY, 1976

by

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INTRODUCTION

Fish were sampled in five tributaries to the North Fork of Feather River in September and October 1976. Sampling effort was abbreviated and preliminary. Two of the streams, Big Grizzly Creek and Little Last Chance Creek, were examined to establish reconnaissance-level estimates of fish biomass in selected stream sections. The remaining three streams, Red Clover Creek, Last Chance Creek, and Squaw Queen Creek, were sampled to update unpublished data collected in past years and to estimate biomass in other small sections of these creeks. The purpose of this work was to gather background data for an instream water needs study.

METHODS

Standing stocks of fishes were estimated in selected stations in five streams (Figure 1) in Plumas County. Fish were sampled in riffles and small pools, but not in large pools such as beaver ponds. Stations varied in length from 30 to 100 meters, according to the availability of suitable sampling water. The length, average width, and average depth of each section were measured with a cloth tape. Fish were captured with a battery-powered backpack electroshocker in stream sections blocked by seines. Captured fish were removed from the net-enclosed section on each of two passes. Standing stock estimates were developed using the two-count method of Seber and LeCren (1967).

Fish weights were determined by displacement. One hundred individuals of each species were weighed to the nearest gram with a triple beam balance and placed in a graduate cylinder containing water. The amount of water each fish displaced was compared to its weight, and a weight-displacement

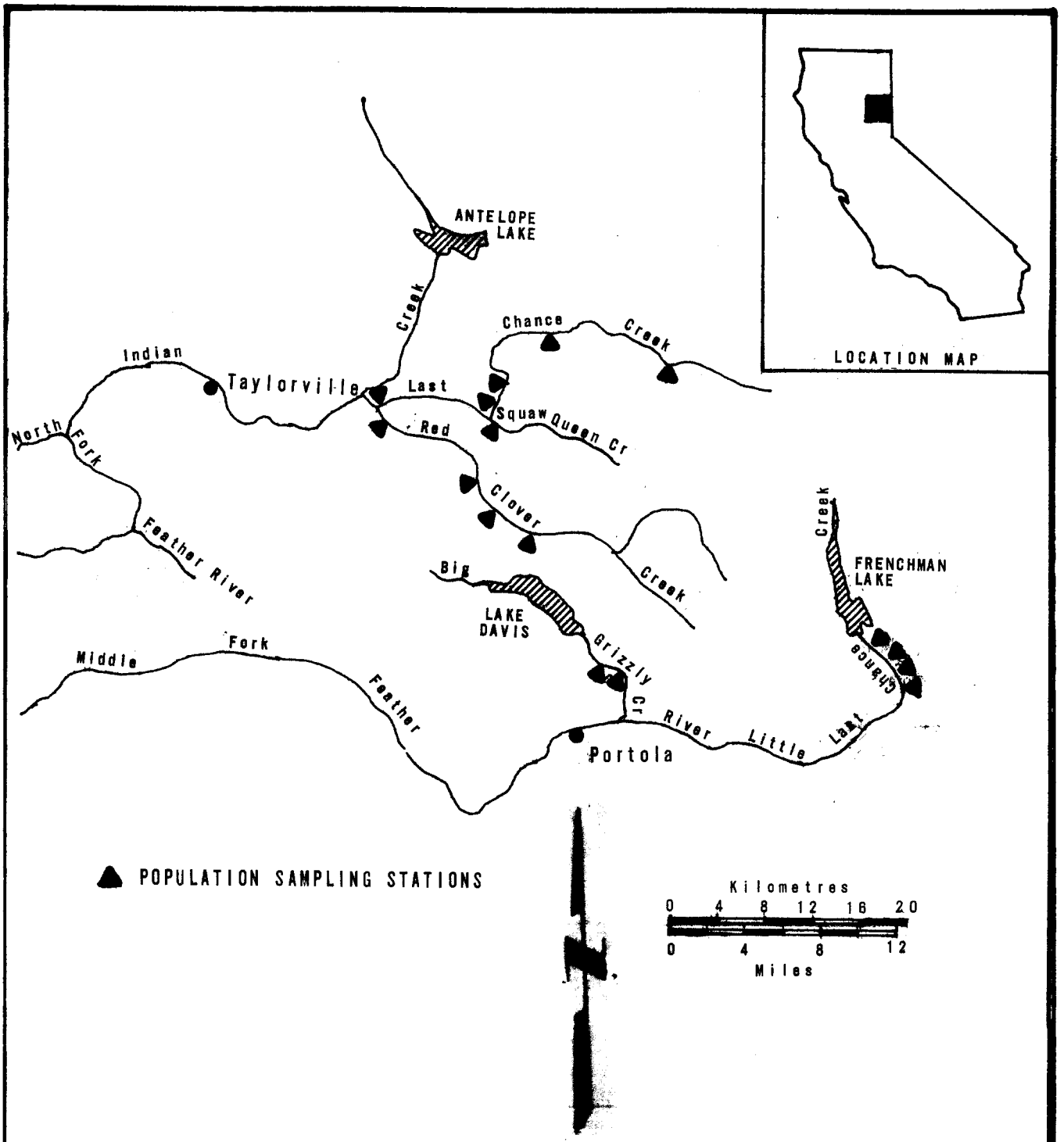

Figure 1 FISH POPULATION SAMPLING STATIONS ON FIVE FEATHER RIVER TRIBUTARIES, 1976

relationship was established for the group through regression analysis (Li, 1964). Salmonids were measured to the nearest millimeter fork length; however, nongame fishes were not measured.

RESULTS

Red Clover Creek

Speckled dace (Rhinichthys osculus), Sacramento sucker (Catostomus occidentalis), brown trout (Salmo trutta), and rainbow trout (Salmo gairdneri) were caught in this stream. Combined salmonid biomass ranged from 0 to 1.3 g/m^2 in four stations (Table 1). Fifty-seven rainbow trout ranged from 43 to 268 mm, and 11 brown trout ranged from 65 to 107 mm in length. Combined nongame fish biomass varied from 0.1 to 2.6 g/m^2 in four stations.

Little Last Chance Creek

Sacramento sucker, brown bullhead (Ictalurus nebulosus), brown trout, and rainbow trout were caught in Little Last Chance Creek. Combined salmonid biomass ranged from 0.2 to 6.3 g/m^2 in four stations (Table 2). Thirty-eight rainbow trout ranged from 77 to 279 mm in length. One brown trout was 206 mm long. Sacramento suckers were caught in one section and their biomass was 6.6 g/m^2. Black bullheads were also present in one section and their biomass was 2.2 g/m^2.

Big Grizzly Creek

Sacramento sucker and rainbow trout were caught in Big Grizzly Creek. Rainbow trout biomass was 1.5 g/m^2 in one station and 2.2 g/m^2 in another (Table 3). Thirty-two trout ranged from 98 to 232 mm in length. Sacramento sucker biomass was 4.0 g/m^2 in one station and 6.1 g/m^2 in another.

TABLE 1

BIOMASS OF FISHES CAUGHT IN RED CLOVER CREEK, PLUMAS COUNTY, OCTOBER 1976

Distance Above Confluence with Indian Creek	Species	Biomass (g/m^2)
3.2 km	RT-BN [1/]	1.3
	SKR [2/]	0.1
13.0 km	RT-BN	0.3
	DC-SKR [3/]	0.5
16.6 km	RT-BN	0.9
	DC-SKR	2.6
19.2 km	DC	0.4

1/ RT = Rainbow trout; BN = Brown trout

2/ SKR = Sacramento sucker

3/ DC = Speckled dace

TABLE 2

BIOMASS OF FISHES CAUGHT IN LITTLE LAST CHANCE CREEK, PLUMAS COUNTY, NOVEMBER 1976

Distance Below Frenchman Dam	Species	Biomass (g/m^2)
1.6 km	RT	0.2
1.8 km	RT	6.3
3.2 km	RT	5.0
	BB 1/	2.2
4.6 km	RT-BN	1.7
	SKR	6.6

1/ BB = Brown bullhead

TABLE 3

BIOMASS OF FISHES CAUGHT IN BIG GRIZZLY CREEK, PLUMAS COUNTY, NOVEMBER 1976

Distance Below Lake Davis Dam	Species	Biomass (g/m^2)
4.8 km	RT	2.2
	SKR	1.5
5.2 km	RT	1.5
	SKR	1.2

Last Chance Creek

Sacramento sucker, speckled dace, Sacramento squawfish (Ptychocheilus grandis), rainbow trout, and brown trout were caught in Last Chance Creek. Combined salmonid biomass ranged from 0.1 to 2.7 g/m^2 in five stations (Table 4). Sixteen rainbow trout ranged from 57 to 227 mm in length. Ten brown trout ranged from 51 to 107 mm in length. Combined nongame fish biomass ranged from 0.4 to 2.6 g/m^2 in five stations.

Squaw Queen Creek

Sacramento sucker, speckled dace, rainbow trout, and brown trout were caught in Squaw Queen Creek. Combined salmonid biomass was 0.3 g/m^2 for one station. Three rainbow trout were 64, 68, and 157 mm long. One brown trout was 84 mm long. Combined biomass of speckled dace and Sacramento suckers was 9.7 g/m^2 for one station.

DISCUSSION

In my opinion, these data are of a very abbreviated and preliminary nature. Sample sections were selected on the basis of convenience; therefore they are not necessarily representative of any larger reach of stream. The large variances of these data indicate that they are representative only of the immediate sections sampled. In order to establish suitable estimates of fish biomass for larger reaches of streams, it would be necessary to sample at least three sections per kilometer. If biomass variance is large, more sample sections would be required.

A very brief period of time was allocated for this study; consequently, it was not possible to gather enough data to make estimates of fish numbers or biomass in these streams.

TABLE 4

BIOMASS OF FISHES CAUGHT IN LAST CHANCE CREEK, PLUMAS COUNTY, OCTOBER 1976

Distance Above Confluence with Red Clover Creek	Species	Biomass (g/m^2)
200 m	RT	2.7
	SQ-SKR [1/]	2.1
11.5 km	RT	0.1
	DC-SKR	0.4
14.4 km	RT-BN	0.1
	DC-SKR	2.6
24.0 km	BN	0.1
	DC-SKR	1.9
36.8 km	RT-BN	0.1
	DC	1.2

1/ SQ = Sacramento squawfish

LITERATURE CITED

Li, Jerome C. R. 1964. Statistical Inference. Edwards Bros., Inc. Ann Arbor, Michigan. 658 p.

Seber, G. A. F. and E. D. LeCren. 1967. Estimating population parameters from catches large relative to the population. J. Anim. Ecol. 36(3): 631-643.

APPENDIX 1 - Lengths of trout caught in Red Clover Creek, Plumas County, in October 1976

	RT	BN		RT	BN		RT	BN
30			60	1		90		
31			61			91		
32			62	2		92		
33			63	6		93		
34			64	1		94		
35			65	2	1	95		
36			66	1		96		
37			67	3		97		
38			68	4		98		
39			69			99		1
40			70	2		100		
41			71			101		
42			72	2	1	102		
43	1		73	6		103		1
44			74	3		104		
45			75	1	2	105	1	
46			76			106		
47			77	2	1	107	1	1
48			78	3		108		
49			79			109		
50			80	1		110		
51			81	2		111		
52			82			112		
53			83	1	1	113		
54			84		1	114		
55			85	1		115		
56	1		86			116		
57	1		87		1	117		
58	3		88	1		118		
59			89			119		

	RT	BN		RT	BN		RT	BN
120			150			180		
121	1		151			181	1	
122			152			182		
123			153			183		
124	1		154			184		
125			155			185		
126			156			186		
127			157			187		
128			158			188		
129			159			189		
130			160			190		
131			161			191		
132			162			192		
133			163			193		
134			164			194		
135			165			195		
136			166			196		
137			167			197		
138			168			198	1	
139			169			199		
140			170			200		
141			171					
142			172			268	1	
143			173					
144			174					
145			175					
146			176					
147			177					
148			178					
149			179					

APPENDIX 2 - Lengths of trout caught in Little Last Chance Creek, Plumas County, 1976

	RT	BN		RT	BN		RT	BN
30			60			90		
31			61			91		
32			62			92	1	
33			63			93		
34			64			94		
35			65			95		
36			66			96		
37			67			97		
38			68			98		
39			69			99		
40			70			100	1	
41			71			101		
42			72			102		
43			73			103		
44			74			104	1	
45			75			105	1	
46			76			106		
47			77	1		107		
48			78			108		
49			79			109		
50			80			110		
51			81			111		
52			82			112		
53			83			113		
54			84			114		
55			85			115		
56			86	1		116		
57			87			117		
58			88			118		
59			89			119		

	RT	BN
120		
121		
122		
123		
124		
125		
126		
127		
128		
129		
130		
131		
132		
133	1	
134		
135		
136		
137		
138	1	
139		
140	1	
141		
142		
143		
144		
145		
146		
147		
148		
149		
150	1	
151	1	
152		
153	1	
154		
155		
156		
157		
158	1	
159		
160		
161		
162	2	
163	1	
164	1	
165	3	
166		
167		
168		
169		
170		
171	1	
172		
173	1	
174	2	
175		
176	1	
177		
178		
179		
180		
181		
182		
183	1	
184	2	
185		
186		
187		
188		
189	1	
190	1	
191	-	
192		
193	1	
194	1	
195		
196		
197		
198		
199		
200		
206	1	1
207	1	
208	1	
219	1	
271	1	

APPENDIX 3 - Lengths of trout caught in Big Grizzly Creek, Plumas County in November 1976

	RT	BN		RT	BN		RT	BN
30			60			90		
31			61			91		
32			62			92		
33			63			93		
34			64			94		
35			65			95		
36			66			96		
37			67			97		
38			68			98	2	
39			69			99		
40			70			100		
41			71			101		
42			72			102		
43			73			103		
44			74			104	2	
45			75			105		
46			76			106		
47			77			107	6	
48			78			108		
49			79			109		
50			80			110		
51			81			111	1	
52			82			112		
53			83			113		
54			84			114		
55			85			115		
56			86			116	2	
57			87			117	1	
58			88			118		
59			89			119	3	

	RT	BN		RT	BN		RT	BN
120			150			180		
121			151			181		
122			152			182		
123	1		153			183		
124			154			184		
125			155	1		185		
126			156			186		
127			157			187		
128			158			188		
129			159			189		
130			160			190		
131	1		161			191		
132			162			192		
133			163			193		
134			164	1		194		
135			165			195		
136			166			196		
137	1		167			197		
138			168			198		
139			169			199		
140			170			200	1	
141			171			201	2	
142			172			204	2	
143			173			208	1	
144			174			214	1	
145			175			218	1	
146			176			219	1	
147			177			232	1	
148			178					
149			179					

APPENDIX 4 - Lengths of trout caught in Last Chance Creek, Plumas County in October 1976

	RT	BN		RT	BN		RT	BN
30			60			90		
31			61		1	91		
32			62	1		92		
33			63			93		
34			64	1		94		
35			65	1		95		
36			66	1		96		
37			67	2		97		
38			68	2		98		
39			69			99		
40			70			100		
41			71		1	101		
42			72		1	102		
43			73	1		103		
44			74			104		
45			75		1	105		
46			76		1	106		
47			77			107		1
48			78			108		
49			79			109		
50			80		1	110		
51		1	81			111		
52			82			112		
53			83			113		
54			84	1		114		
55		1	85			115		
56		1	86			116		
57	1		87			117		
58			88			118		
59	1		89			119		

	RT	BN		RT	BN		RT	BN
120			150			180		
121			151			181		
122			152			182		
123			153			183		
124			154			184		
125			155			185		
126			156			186		
127			157			187		
128			158			188		
129			159			189		
130			160			190	1	
131			161			191		
132			162			192		
133			163			193		
134			164			194		
135			165	1		195		
136			166			196		
137			167			197		
138			168			198		
139			169			199		
140			170			200	1	
141			171			227	1	
142			172					
143			173					
144			174					
145			175					
146			176					
147			177					
148			178					
149			179					

APPENDIX 5 - Population estimates, weight estimates, and biomass by water volume for five Plumas County streams sampled in October and November 1976

Location	Species	Population Estimate	95% Confidence Interval for Pop. Est.	Weight Estimate (g)	Biomass (g/m^3)
Red Clover Creek					
3.2 km above Indian Creek	RT-BN	52	43-61	318	3.5
	SKR	2	2-2	20	0.7
13.0 km	RT-BN	13	7-19	143	2.1
	DC-SKR	60	56-64	229	3.4
16.6 km	RT-BN	11	10-12	273	3.2
	DC-SKR	249	221-278	831	9.7
19.2 km	DC	101	81-120	111	1.4
Little Last Chance Creek					
1.6 km below Frenchman Dam	RT	1	1-1	30	1.1
1.8 km	RT	16	13-19	969	34.7
3.2 km	RT	14	13-16	733	15.0
	BB	4	3-11	319	6.5
4.6 km	RT-BN	8	7-9	288	6.1
	SKR	11	8-13	1,144	24.3
Big Grizzly Creek					
4.8 km below Lake Davis	RT	21	17-30	649	9.1
	SKR	25	12-85	432	6.1
5.2 km	RT	15	14-17	781	4.8
	SKR	13	8-33	651	4.0
Last Chance Creek					
200 m above Red Clover Creek	RT	12	10-20	671	5.2
	SQ-SKR	25	21-35	531	4.1
11.5 km	RT	3	3-3	13	0.3
	DC-SKR	63	60-69	91	2.2
14.4 km	RT-BN	2	2-2	7	0.1
	DC-SKR	250	182-318	658	5.8
24.0 km	BN	8	7-14	21	0.7
	DC-SKR	264	239-289	496	15.5
36.8 km	RT-BN	5	5-5	13	0.4
	DC	207	187-227	351	9.5